

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 6 recites the broad recitation "...the long marks have lengths of at least 6 T", and the claim also recites "...in particular the lengths being in the range of 8 T to 14 T" which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 through 4, 7 through 8, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi [EP 1,291,854] in view of Oostveen et. al. [US 2002/0031064] and in further view of Maeda et. al [US 5,870,375].

6. Regarding claim 1, Kobayashi teaches a record carrier of a writable type [abstract] for recording information by writing marks in a track on a recordable area of a recording layer via a beam of radiation [0010] entering through an entrance face of the record carrier [fig. 1], the marks being detectable during scanning the track via the beam by a first type of variations of the radiation [0010], the record carrier comprising at least a first recording layer [fig. 3, L0] and a second recording layer [fig. 3, L1], the first recording layer being present at a position closer to the entrance face than the second recording layer [fig. 3], and at least one transparent spacer layer between the recording layers [fig. 3, 42], and each layer comprising a pregroove [claim 5] indicating the position of the track, the pregroove exhibiting a wobble constituted by displacements of the pregroove in a direction transverse to the longitudinal direction of the track [fig. 17].

7. However, Kobayashi does not teach a record carrier that features a wobble exhibiting a wobble modulation and the pregroove exhibiting a pregroove modulation constituted by variations of a physical parameter related to the shape of the pregroove,

the pregroove modulation representing auxiliary control information, the wobble modulation being detectable during said scanning by a second type of variations of the radiation and the pregroove modulation being detectable during said scanning by further variations of said first type.

8. Oostveen does teach a record carrier that features a wobble exhibiting a wobble modulation [fig. 1b] and the pregroove exhibiting a pregroove modulation constituted by variations of a physical parameter related to the shape of the pregroove [fig. 1b & 1c], the pregroove modulation representing auxiliary control information [0001, note that while this is given as background art, it is inherent to the Oostveen invention, see section 0003], the wobble modulation being detectable during said scanning by a second type of variations of the radiation [0001] and the pregroove modulation being detectable during said scanning by further variations of said first type [0020].

9. It would have been obvious to one with ordinary skill in the art at the time of invention to combine the record carrier features taught by Oostveen with the record carrier features taught by Kobayashi because the combination of wobble modulation with pregroove modulation would have predictable results, namely that two different forms of data could be encoded into the wobble and the pregroove.

10. Kobayashi in view of Oostveen do not teach a record carrier with wobble modulation for representing physical address information indicating the physical position of the physical address with respect to a starting point of the track.

11. Maeda teaches a record carrier with wobble modulation for representing physical address information indicating the physical position of the physical address with respect to a starting point of the track [abstract].

12. It would have been obvious to one with ordinary skill in the art at the time of invention to combine the wobble modulation for encoding physical address information taught by Maeda with the record carrier taught by Kobayashi in view of Oostveen because combining the two sets of elements would have predictable results, namely that a record carrier reading device would read in physical address information when it demodulated the track wobble.

13. Regarding claim 2, Kobayashi in view of Oostveen and in further view of Maeda teach the record carrier as taught in claim 1.

14. Furthermore, Kobayashi teaches a record carrier wherein said first type of variations are variations of a reflection level of the track for the radiation [0007, note that while this element is given as background art, it is inherent to the Kobayashi invention, see section 0009].

15. Regarding claim 3, Kobayashi in view of Oostveen and in further view of Maeda teach the record carrier as taught in claim 1.

16. Furthermore, Oostveen teaches a record carrier wherein the pregroove modulation is constituted by variations of the depth or width of the pregroove [fig. 1b].

17. It would have been obvious to one with ordinary skill in the art at the time of invention to combine the pregroove with variations of the depth or width taught by Oostveen with the record carrier features taught by Kobayashi and Maeda because

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using a pregroove with variations of the depth or width would provide predictable results, namely a method to encode information in the pregroove.

18. Regarding claim 4, Kobayashi in view of Oostveen and in further view of Maeda teach the record carrier as taught in claim 3.

19. Furthermore, Oostveen teaches a record carrier wherein the pregroove modulation comprises pregroove land areas ([fig. 1b, 4] of zero depth alternating with pregroove pit areas [fig. 1b, 5] of a predefined depth and width for constituting a pattern of pregroove marks representing the auxiliary control information [0001].

20. It would have been obvious to one with ordinary skill in the art at the time of invention to combine the pregroove land and pit areas taught by Oostveen with the record carrier features taught by Kobayashi and Maeda because using pregroove land and pit areas would provide predictable results, namely a method to encode information in the pregroove.

21. Regarding claim 7, Kobayashi in view of Oostveen and in further view of Maeda teach the record carrier as taught in claim 4.

22. In addition, Oostveen teaches a record carrier wherein the pregroove modulation is representing the auxiliary control information encoded by the pregroove marks according to a predefined channel coding algorithm [0001, "...first variations caused by the existence or nonexistence of information marks along the track...the information marks are for example in the form of pits."], which predefined channel coding algorithm differs from a channel coding algorithm for encoding the information in the marks in the track [0001, "...second variations are in the form of variations in the radial position]

23. It would have been obvious to one with ordinary skill in the art at the time of invention to combine the separate channel encoding taught by Oostveen with the record carrier taught by Kobayashi and Maeda because doing so would have predictable results, namely that the two separate sets of coded data would not cause cross-talk when demodulated.

24. Regarding claim 8, Kobayashi in view of Oostveen and in further view of Maeda teach the record carrier as taught in claim 1.

25. Furthermore, Oostveen teaches a record carrier wherein the pregroove modulation is aligned with the wobble modulation [0035, "The phase of the second variations is coupled to those of the first variations...].

26. It would have been obvious to one with ordinary skill in the art at the time of invention to combine the aligned pregroove and groove modulation taught by Oostveen with the record carrier taught by Kobayashi and Maeda because aligning the phases of the two separate modulations can be used to mark specific radial address points.

27. Regarding claim 10, Kobayashi in view of Oostveen in further view of Maeda teach all of the elements of the record carrier of writable type as claimed in claim 10 [see above for specific details].

28. Kobayashi also teaches a record carrier with pregroove modulation on the first and the second recording layer [claim 5].

29. Kobayashi does not teach a device for scanning a track on a record carrier via a beam of radiation, the device comprising a head for providing the beam, a front-end unit for generating a scanning signal for detecting marks in the track by detecting scanning

signal variations due to a first type of variations of the radiation, wobble detection means for retrieving the physical address information from the wobble modulation by detecting a second type of variations of the radiation, and pregroove demodulation means for retrieving the auxiliary control information from the pregroove modulation on the first and the second recording layer by detecting further scanning signal variations due to the first type of variations of the radiation.

30. Oostveen teaches a device for scanning a track on a record carrier via a beam of radiation [0020], the device comprising a head for providing the beam [0040, note that the head is referred to as an “optical unit”], a front-end unit for generating a scanning signal for detecting marks in the track by detecting scanning signal variations due to a first type of variations of the radiation [fig. 3, 20a, 20b, 20c, also see section 0040], wobble detection means [abstract, note that the ‘second variations’ are variations due to radial displacement] for detecting a second type of variations of the radiation [abstract], and pregroove demodulation means [abstract, the ‘first recovery unit’] for retrieving the auxiliary control information [0001] from the pregroove modulation detecting further scanning signal variations due to the first type of variations of the radiation [abstract].

31. Maeda teaches retrieving the physical address information from the wobble modulation [abstract]

32. It would have been obvious to one with ordinary skill in the art at the time of invention to combine the device for scanning a track on a record carrier taught by Oostveen with the two layered record carrier taught by Kobayashi because the second layer in the recording could be used for several useful purposes, such as featuring a

separate groove modulation that the first layer for the purpose of reducing cross talk between the two recording layers. In addition, it would have been obvious to one with ordinary skill in the art at the time of invention to combine the physical address retrieval taught by Maeda with the device and record carrier taught by Kobayashi in view of Oostveen because doing so would provide predictable results, namely that the device could demodulate the wobble to retrieve physical address information.

33. Furthermore, claim 12 is rejected by Kobayashi in view of Oostveen in further view of Maeda as the device is inherent to that as claimed in claim 10, and the record carrier is inherent to that as claimed in claim 7. Note that the record carrier reading device would inherently require demodulation means.

34. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi in view of Oostveen in further view of Maeda as applied to claim 4 above, and further in view of Miyamoto et. al. [US 5,982,738].

35. Kobayashi in view of Oostveen in further view of Maeda teach the record carrier as claimed in claim 1.

36. Kobayashi in view of Oostveen in further view of Maeda also teach a record carrier wherein the pregroove modulation is constituted by a carrier pattern of long pregroove marks [Oostveen, fig. 1b].

37. However, Kobayashi in view of Oostveen in further view of Maeda does not teach a record carrier wherein said marks in the track have lengths corresponding to an integer number of channel bit lengths T and the shortest marks having a length of a predefined minimum number d of channel bit lengths T for being detectable via a

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scanning spot having an effective diameter constituted by said beam on the track, the long pregroove marks having lengths of at least two times the predefined minimum number d of channel bit lengths T for being substantially longer than the effective diameter of the scanning spot.

38. Miyamoto does teach a record carrier wherein said marks in the track have lengths corresponding to an integer number of channel bit lengths T [col. 9, 56-59] and the shortest marks having a length of a predefined minimum number d of channel bit lengths T [col. 9, 56-59] for being detectable via a scanning spot having an effective diameter constituted by said beam on the track [col. 1, 15-17], the long pregroove marks having lengths of at least two times the predefined minimum number d of channel bit lengths T [col. 9, 58-60] for being substantially longer than the effective diameter of the scanning spot [fig. 1, #21].

39. It would have been obvious to combine the record carrier with the mark size ranges taught by Miyamoto with the record carrier taught by Kobayashi in view of Oostveen in further view of Maeda because combining the record carrier with a specific range of mark lengths will provide predictable results, namely that the recording marks will be sized properly to reduce reading error.

40. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi in view of Oostveen, in further view of Maeda, in further view of Miyamoto as applied to claim 5 above, and further in view of Miyagawa [US 6,044,051].

41. Kobayashi in view of Oostveen, in further view of Maeda, in further view of Miyamoto teach the record carrier as taught in claim 5.

42. Kobayashi in view of Oostveen, in further view of Maeda, in further view of Miyamoto further teach a record carrier wherein the long marks have lengths of at least 6T, in particular the lengths being in the range of 8T to 14T [Miyamoto, col. 9, 58-60].

43. However, Kobayashi in view of Oostveen, in further view of Maeda, in further view of Miyamoto do not teach a record carrier wherein the predefined minimum number d is 3 channel bit lengths T ($d = 3T$).

44. Miyagawa teaches a record carrier wherein the predefined minimum number d is 3 channel bit lengths T ($d = 3T$) [col. 23, 43-45].

45. It would have been obvious to one with ordinary skill in the art at the time of invention to combine the record carrier with minimum mark length taught by Miyagawa with the record carrier taught by Kobayashi in view of Oostveen, in further view of Maeda, in further view of Miyamoto because the specific minimum value of 3 channel bit lengths would become obvious after a reasonable amount of experimentation.

46. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi in view of Oostveen and in further view of Maeda as applied to claim 1 above, and further in view of Yoon et. al [US 2003/0002420].

47. Kobayashi in view of Oostveen and in further view of Maeda teach the record carrier as claimed in claim 1.

48. However, Kobayashi in view of Oostveen and in further view of Maeda do not teach a record carrier wherein each recording layer comprises a disc information area in which area the pregroove exhibits said pregroove modulation, the disc information area being substantially smaller than the recordable area of the recording layer, and the disc

information areas of the recording layers being located at substantially corresponding radial positions.

49. Yoon teaches a record carrier wherein each recording layer comprises a disc information area [fig. 2, #10, note that the invention taught by Yoon inherently has the same structure as the prior art in figure 2, see section 0014] in which area the pregroove exhibits pregroove modulation [abstract], the disc information area being substantially smaller than the recordable area of the recording layer [fig. 2, note that the lead-in area 10 is much larger than the user data area 20] and the disc information areas of the recording layers being located at substantially corresponding radial positions [fig. 2, note that L0 and L1 are separate recording layers].

50. It would have been obvious to one with ordinary skill in the art at the time of invention to combine the disc information area configuration taught by Yoon with the record carrier taught by Kobayashi in view of Oostveen and in further view of Maeda because a disc with a larger recordable area is obviously more useful and cost effective than a one that has a disc information area larger than the recordable area.

51. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi in view of Oostveen and in further view of Maeda as applied to claim 10 above, and further in view of Satoh et. al. [US 5,214,635].

52. Kobayashi in view of Oostveen and in further view of Maeda teach the device and record carrier as claimed in claim 10. Also, all of the record carrier elements claimed in claim 11 are inherent in the record carrier claimed in claim 5 as rejected by

Kobayashi in view of Oostveen in further view of Maeda in further view of Miyamoto as discussed above.

53. However, Kobayashi in view of Oostveen and in further view of Maeda do not teach a device where the pregroove demodulation means are arranged for detecting the further scanning signal variations due to the long pregroove marks.

54. Satoh teaches a device where the pregroove demodulation means are arranged for detecting the further scanning signal variations due to the long pregroove marks [claim 1].

55. It would have been obvious to one of ordinary skill in the art to at the time of invention to combine the long pregroove mark demodulation taught by Satoh with the device taught by Kobayashi in view of Oostveen and in further view of Maeda because using long pregroove mark demodulation provides a predictable result, namely as an additional factor in determining the tracking position of the laser beam.

56. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi in view of Oostveen and in further view of Maeda as applied to claim 10 above, and further in view of Ueki [US 6,404,713].

57. Kobayashi in view of Oostveen and in further view of Maeda teach device as claimed in claim 10 [see above] wherein the device comprises a control unit for first retrieving the auxiliary control information via the pregroove demodulation [see claim 12 rejection]

58. However, Kobayashi in view of Oostveen and in further view of Maeda do not teach a device wherein the device comprises a control unit for first retrieving the

auxiliary control information and subsequently recording the auxiliary control information in a control area of the record carrier.

59. Ueki teaches a device wherein the device comprises a control unit [fig. 9, #14] for first retrieving the auxiliary control information and subsequently recording the auxiliary control information in a control area of the record carrier [col. 36, lines 63 to col. 37, line 14, and col. 38, lines 9-16].

60. It would have been obvious to one with ordinary skill in the art at the time of invention to combine the device taught by Ueki with the device taught by Kobayashi in view of Oostveen and in further view of Maeda because the combination would provide a predictable result, namely that control information would be properly written in the control section of the record carrier.

Conclusion

61. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Minamino et. al. teaches an optical disk medium where the pregroove is modulated according to four predefined patterns to modulate address information.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW J. SASINOWSKI whose telephone number is (571)270-5883. The examiner can normally be reached on Monday to Friday, 7:30 to 5:00, EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Robinson can be reached on (571)272-2319. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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AJS

/Almis Jankus/
Primary Examiner, Art Unit 2628